

Partial Translation of Reference 7

Jpn. Pat. No. 3194729

Filing No.: 11-148099

Filing Date: May 27, 1999

Applicant: SUMITOMO CONSTR CO LTD

Priority: Not Claimed

Registration Date: June 1, 2001

Request for Examination: Filed.

Int.Cl.: E04B 2/86

2/84

E04C 5/18

Column 4, Line 15 to Line 29

[0004] FIGS. 13 and 14 are schematic longitudinal cross-sectional views showing a conventional reinforcing bar restraining structure using an intermediate restraining reinforcing bar. The reinforcing bar restraining structure shown in FIG. 13 engages an intermediate restraining reinforcing bar 103 having a closed oval shape that is produced by bending a bar steel with a pair of lateral direction reinforcing bars 102 and 102 that are almost parallel with each other and disposed on an outer side, that is, a member surface side, of a main reinforcing bar 101. In this manner, the main reinforcing bars 101 and 101 are restrained from being displaced in a direction of separating from each other through the lateral direction reinforcing bars 102 and 102.

[0005] In addition, the reinforcing bar restraining structure shown in FIG. 14 uses an intermediate restraining reinforcing bar 113 that is produced by bending both end sections in a hook shape. Lateral direction reinforcing bars 112 and 112 are engaged with the hook shape sections, so as to restrain main reinforcing bars 111 and 111 from expanding to outer sides by using the lateral direction reinforcing bars.

Column 10, Line 28 to Column 11, Line 21

[0038] In addition, as shown in FIG. 11, a precast concrete plate 32 that is a plate member made of concrete, in which reinforcing bars 33 are embedded almost in

parallel with each other, is manufactured in advance. A plurality of restraining jigs 34 having a triangular shape are disposed on the precast concrete plate 32 in a manner enclosing two of the reinforcing bars. Part of the restraining jig 34 is embedded in the concrete plate 32 in such a manner that a vertex section having an opening of the restraining jig 34 projects from a surface, and the reinforcing bars 33 are disposed to cross inner sides of the other vertex sections. The reinforcing bars 33 are used as lateral direction reinforcing bars of a bridge pier framework.

[0039] The precast concrete plates 32 are fixed on outer sides of the main reinforcing bars 31 in a manner facing each other with surfaces, from which the restraining jigs 34 project, placed in the inside, as shown in FIG. 9B. At this time, since part of the restraining jigs 34 project from the precast concrete plates 32, the precast concrete plates 32 are slung by using the restraining jigs 34 so that the precast concrete plates 32 can be easily fixed on desired locations.

[0040] Then, as shown in FIG. 12, both end sections of an intermediate connection member 35 that is screwed with nuts 37 in advance are inserted through two of the restraining jigs 34 that face each other and project from the precast concrete plates 32. Then, other nuts 36 are screwed on the both end sections from an inner sides of the restraining jigs 34. Then, the intermediate connection member 35 is joined in a manner that two of the nuts 34 and 37 sandwich a section around the opening of the restraining jig. By joining the intermediate connection members 35 with a plurality of the restraining jigs 34 that face each other as described above, two of the precast concrete plates 32 are connected firmly. After the above, as shown in FIG. 10, concrete 38 is cast between two of the precast concrete plates 32, and cured. In the above manner, a reinforced concrete structure is constructed, two of the precast concrete plates 32 become part of the structure. At this time, since the precast concrete plates 32 and the concrete that is newly cast are connected by the restraining jigs 34, integrity of both of the concrete is improved.

[0041] In the above construction method of the concrete structure, the precast concrete plates 32 function as a formwork. Also, by building the precast concrete

plates 32, the lateral direction reinforcing bars 33 and the restraining jigs 34 can be disposed at predetermined positions at the same time. For the above reasons, work for assembling reinforcing bars and assembling a formwork is saved, and work efficiency is improved. In addition, by connecting both ends of the intermediate connection members 35 with the restraining jigs 34 that project to inner sides of two of the precast concrete plates 32, two of the precast concrete plates 32 that face each other can be easily fixed with correct space therebetween.